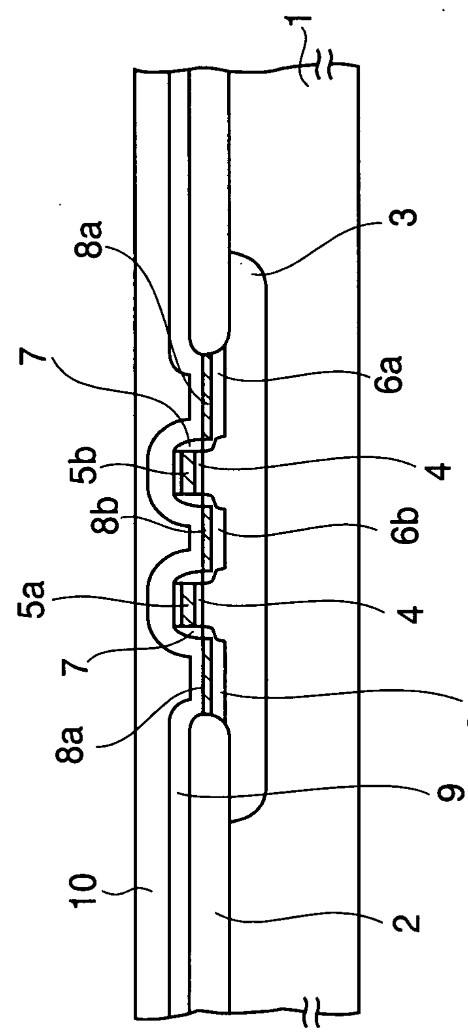
FIG. 1A



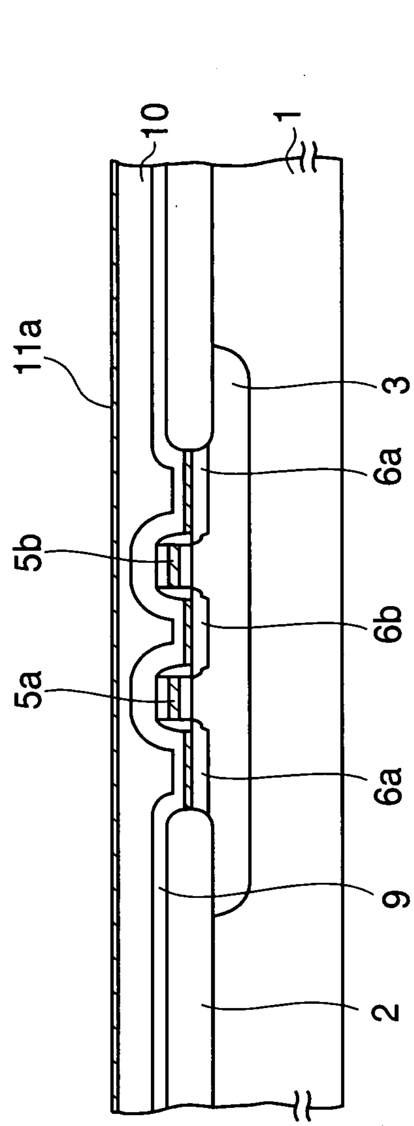


FIG. 1B

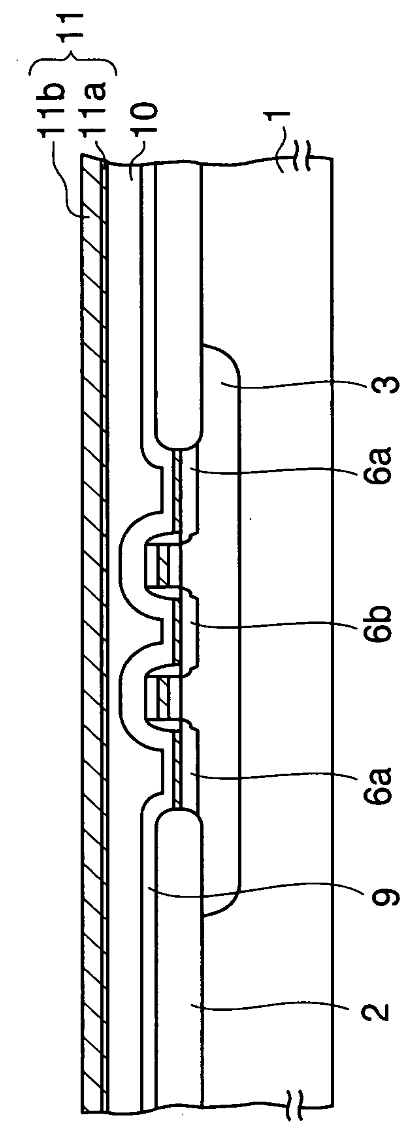


FIG. 1C

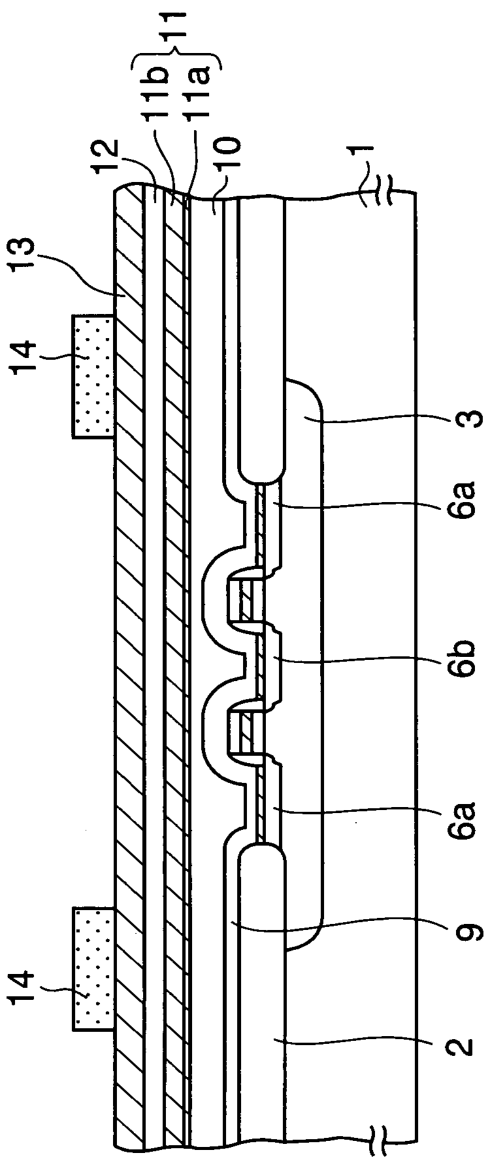

14
14
13
12
11b
11a
11
10
1
3
6a
6b
6a
9
2

FIG. 1D

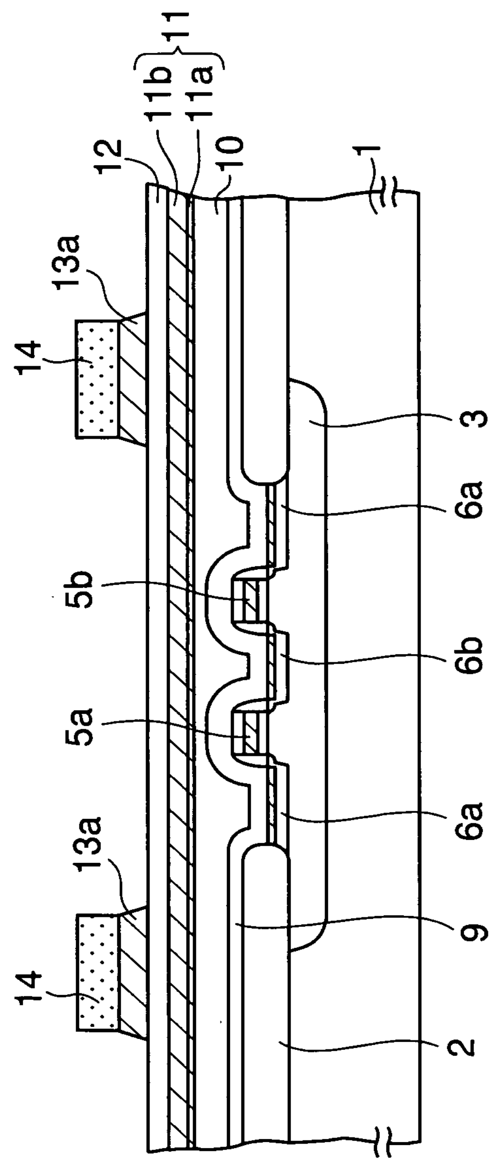

14
14
13a
13a
12
11b
11a
11
10
1
3
6a
5b
6b
5a
6a
9
2

FIG. 1E

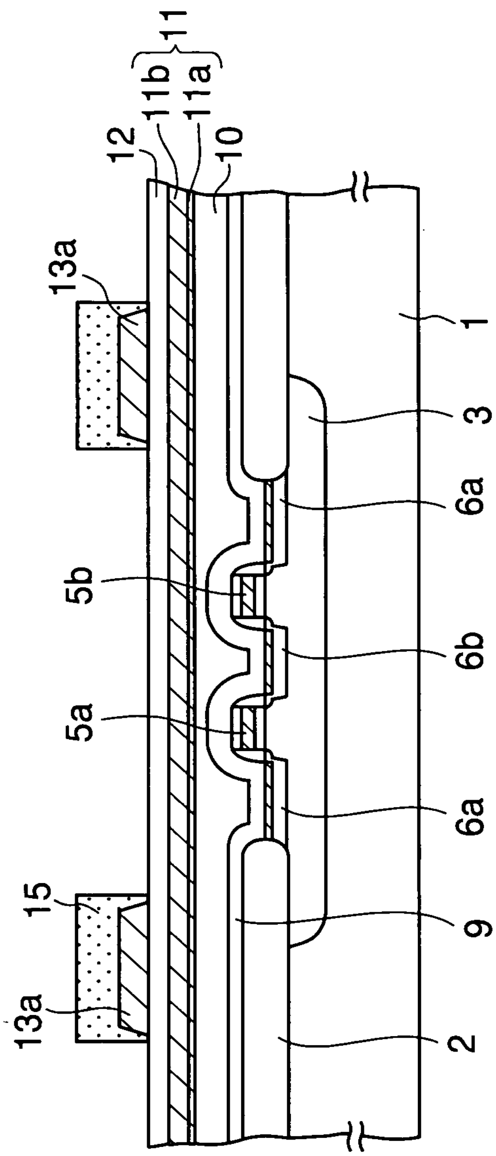

12
11b
11a
11
10
13a
1
3
6a
5b
6b
5a
6a
15
9
13a
2

FIG. 1F

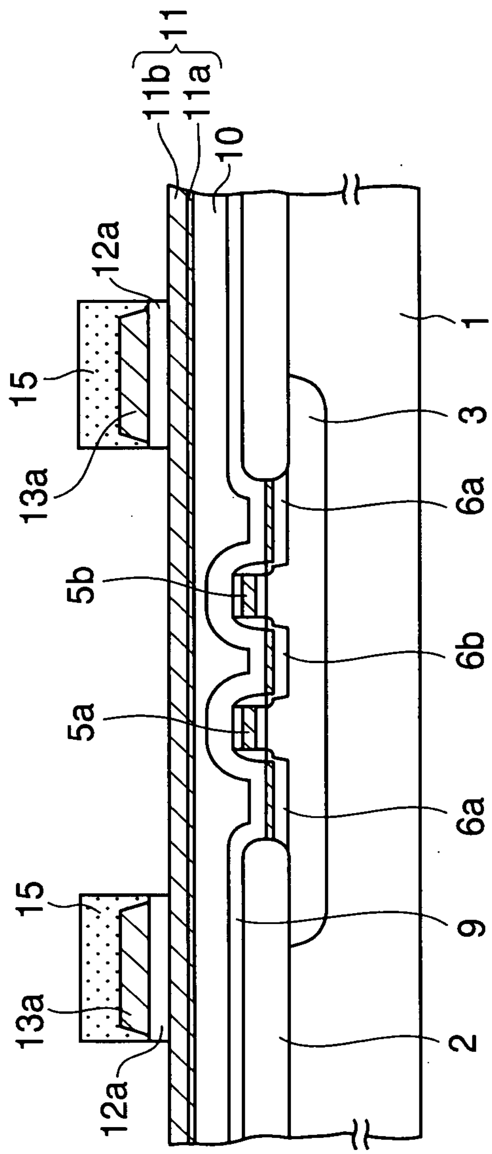

11b
11a
11
10
12a
1
15
3
13a
6a
5b
6b
5a
6a
15
9
13a
2
12a

FIG. 1G

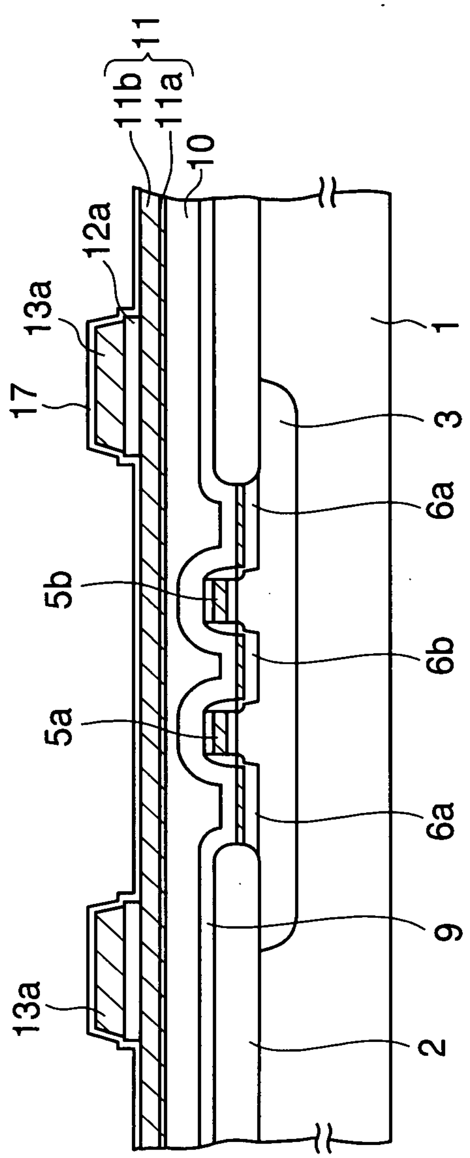

11b
11a
11
10
12a
13a
17
5b
5a
13a
6a
6b
6a
9
2
3
1

FIG. 1H

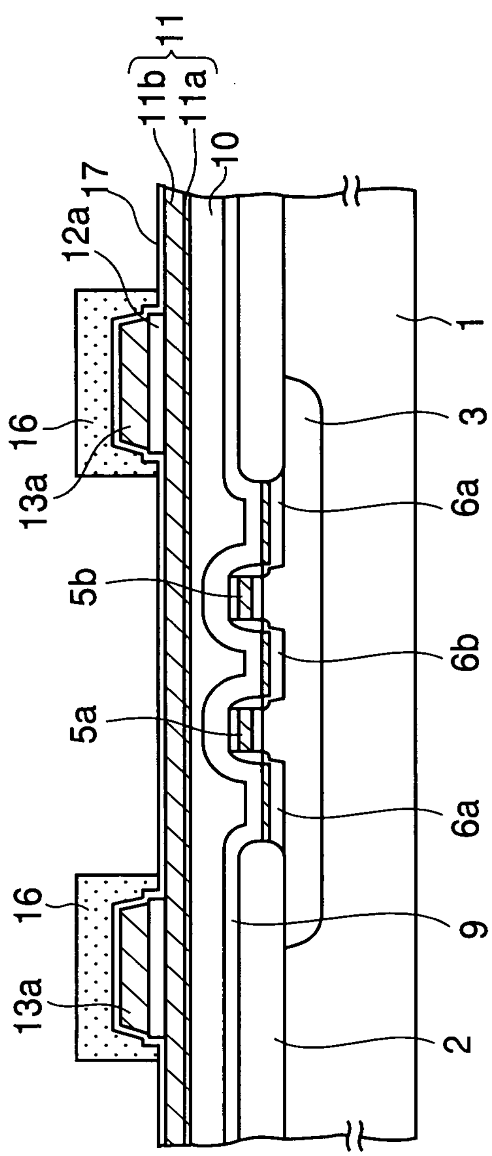

11b
11a
11
10
17
12a
16
13a
5b
5a
16
13a
6a
6b
6a
9
2
3
1

FIG. 1I

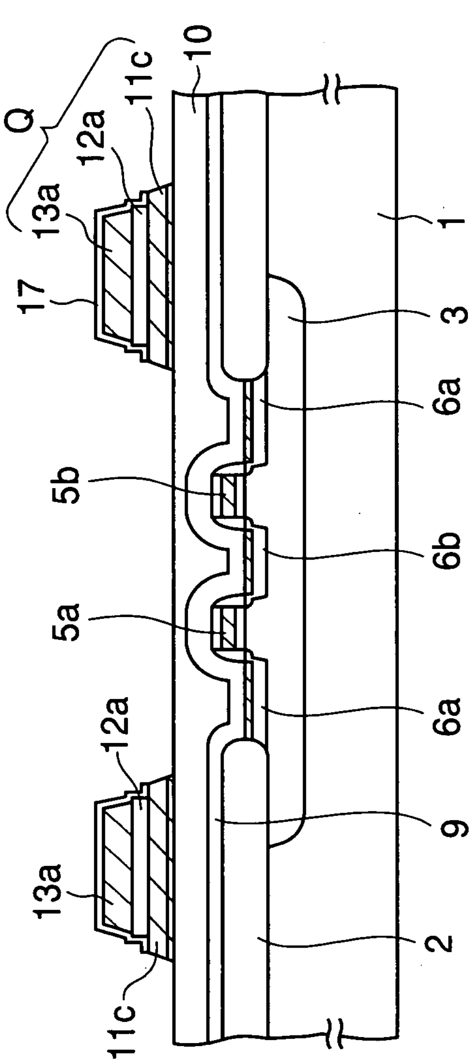

Q
11c
10
12a
13a
17
5b
5a
12a
13a
11c
1
3
6a
6b
6a
9
2

FIG. 1J

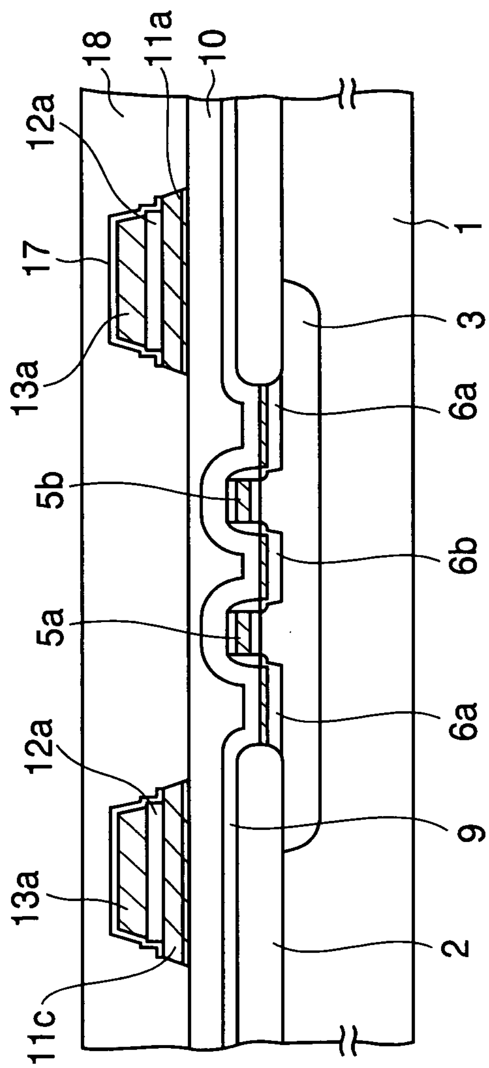

18
11a
10
12a
17
13a
5b
5a
12a
13a
11c
1
3
6a
6b
6a
9
2

FIG. 1K

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Inventor: Mitsushi FUJIKI
Attorney Docket No. 042068

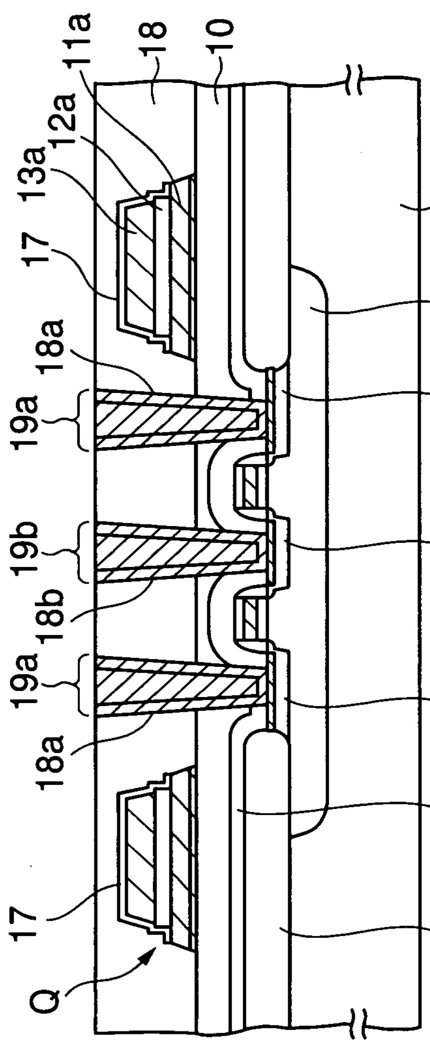


FIG. 1L

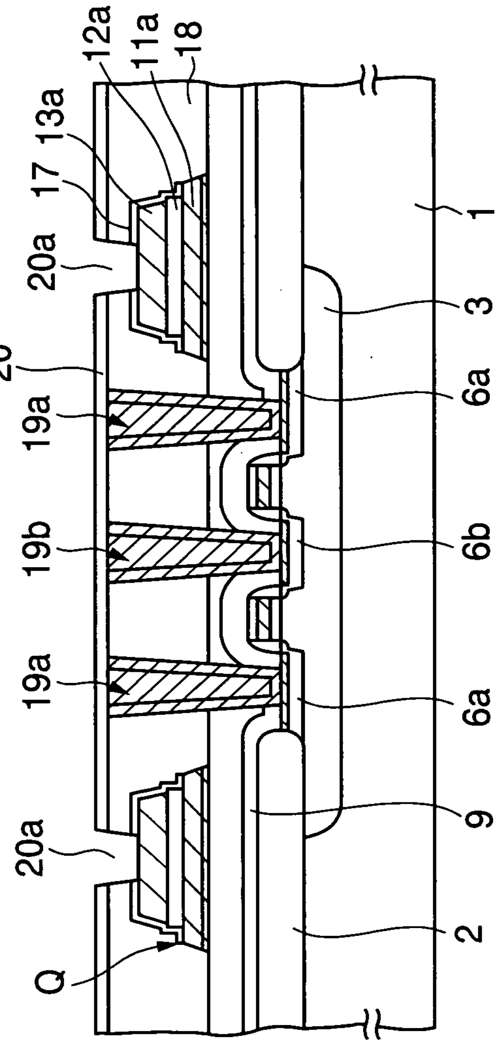


FIG. 1M

FIG. 1N

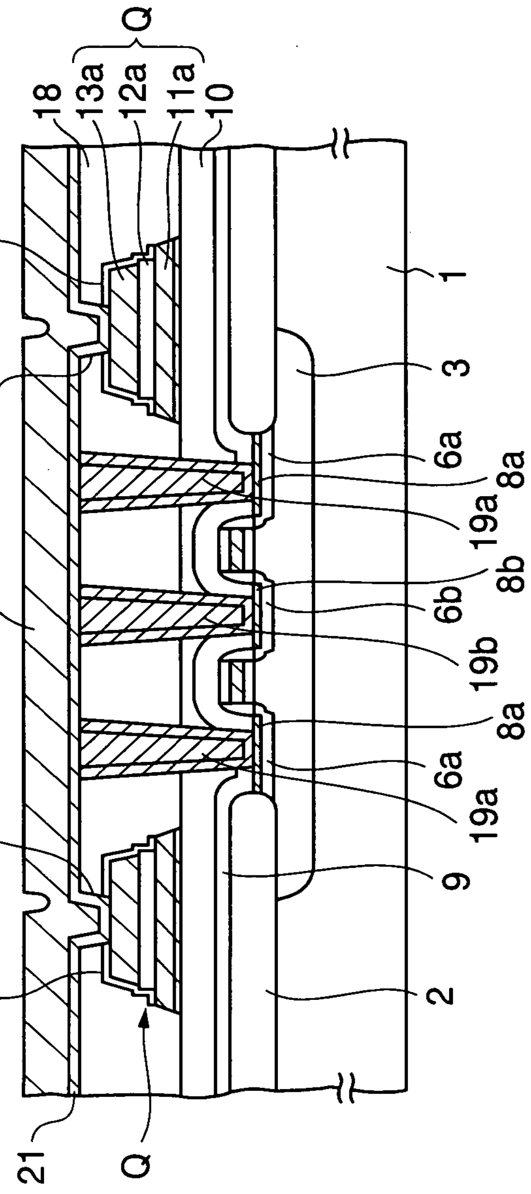


FIG. 10

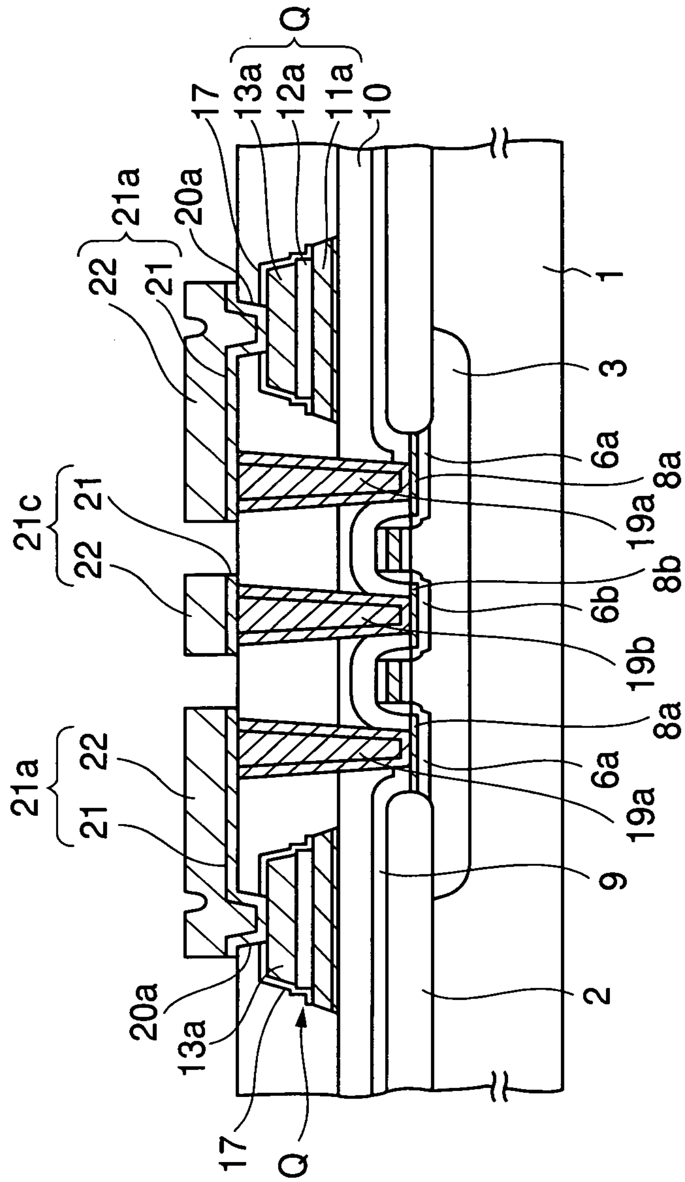


FIG. 1P

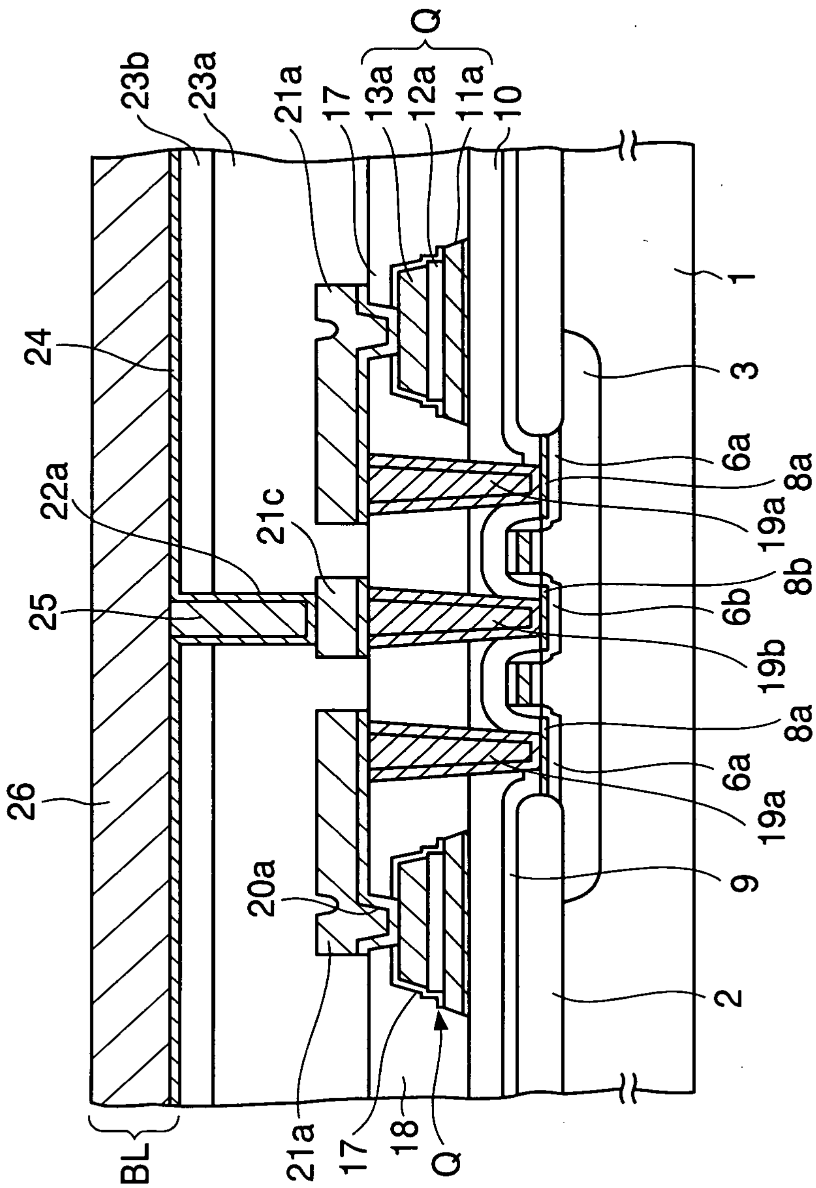

BL
26
25
24
22a
21c
23b
23a
21a
17
13a
12a
11a
10
Q
20a
21a
17
18
Q
19a
6a
8a
19b
6b
8b
19a
8a
6a
3
1
9
2

FIG. 2

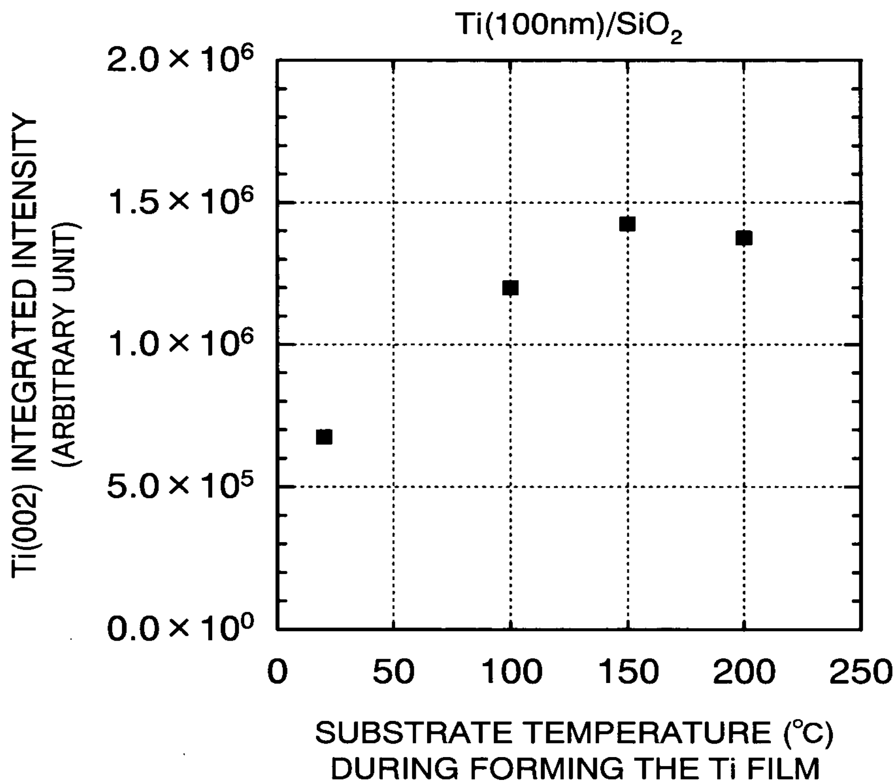

Ti(100nm)/SiO2
Ti(002) INTEGRATED INTENSITY
(ARBITRARY UNIT)
2.0 × 10^6
1.5 × 10^6
1.0 × 10^6
5.0 × 10^5
0.0 × 10^0
0
50
100
150
200
250
SUBSTRATE TEMPERATURE (°C)
DURING FORMING THE Ti FILM

FIG. 3

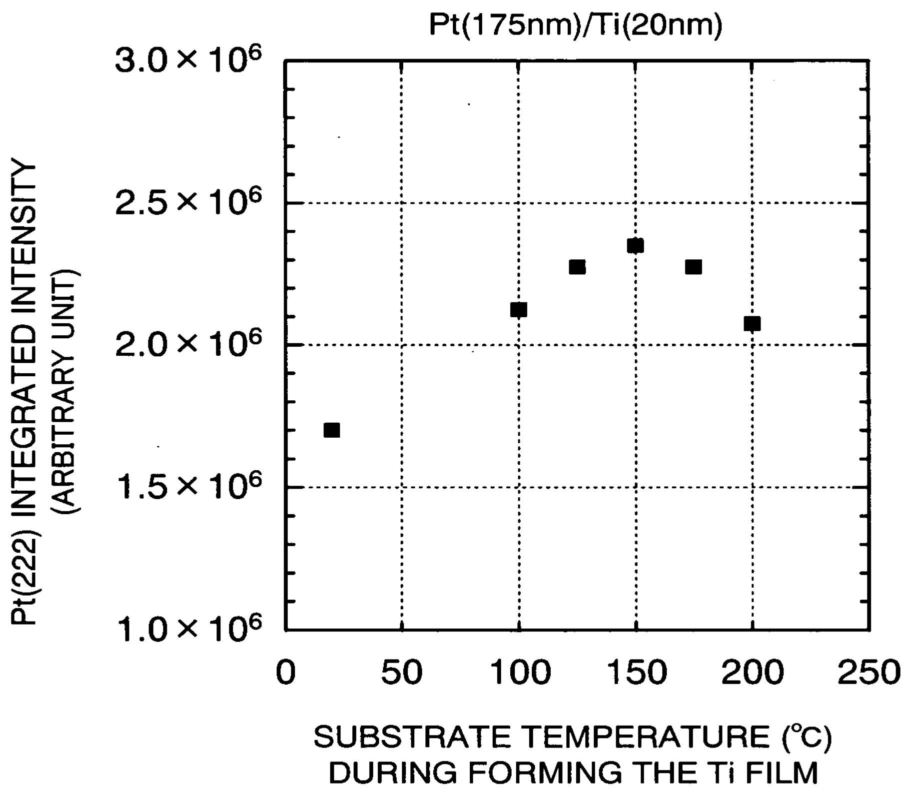
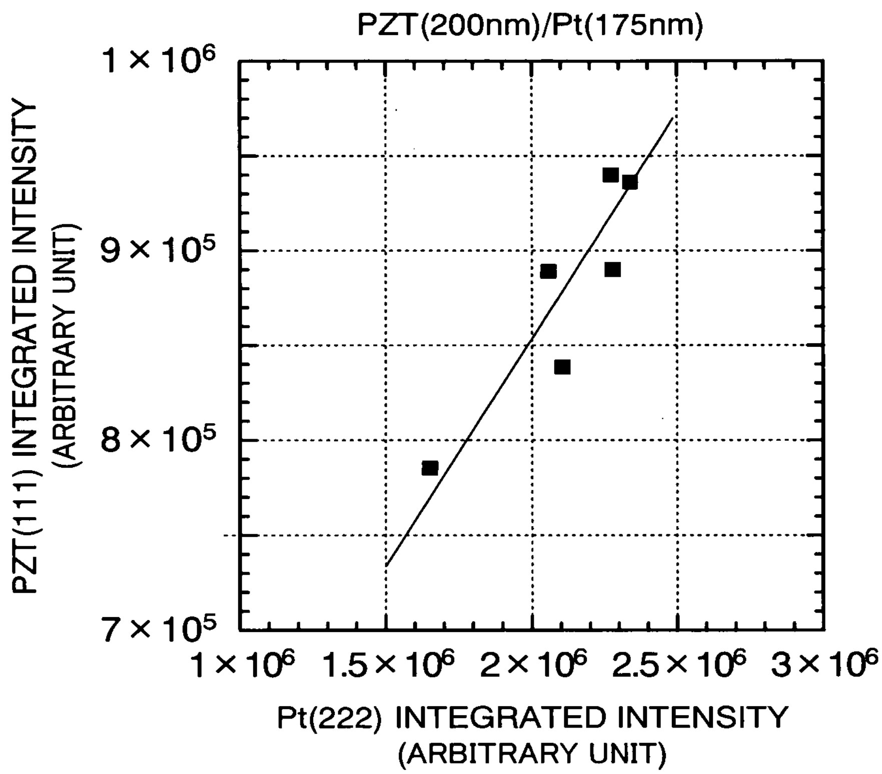

Pt(175nm)/Ti(20nm)
Pt(222) INTEGRATED INTENSITY
(ARBITRARY UNIT)
3.0 × 10^6
2.5 × 10^6
2.0 × 10^6
1.5 × 10^6
1.0 × 10^6
0
50
100
150
200
250
SUBSTRATE TEMPERATURE (℃)
DURING FORMING THE Ti FILM

FIG. 4


PZT(200nm)/Pt(175nm)
1 × 10^6
9 × 10^5
8 × 10^5
7 × 10^5
PZT(111) INTEGRATED INTENSITY
(ARBITRARY UNIT)
1 × 10^6
1.5 × 10^6
2 × 10^6
2.5 × 10^6
3 × 10^6
Pt(222) INTEGRATED INTENSITY
(ARBITRARY UNIT)